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New Crustal Stress Map of the Mediterranean and Central Europe

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The World Stress Map (WSM) Project was initiated in 1986 under the auspices of the International Lithosphere Program in order to compile globally the information on the contemporary crustal stress state. For the 30th anniversary the WSM database has been updated and increased the number of data records from 21,750 to 42,410 worldwide. For the Mediterranean and Central European stress map the number of data records has increased from 3877 to 8192. The data come from a wide range of stress indicators such as borehole data (e.g. hydraulic fracturing, drilling induced tensile fractures, borehole breakouts), earthquake focal mechanism solutions and stress inversions from these, engineering methods (overcoring, borehole slotter) and geological data (e.g. volcanic alignment, inversion of fault slip data). To guarantee the comparability of the different stress indicator the resulting data are quality-ranked using the WSM quality ranking scheme. The new data set has a better coverage and enables us to identifying the regional and local variability of the stress pattern. For the Mediterranean and Central Europe we analysed the wave-length of the stress pattern by determining the mean orientation of the maximum horizontal stress SHmax on a regular grid using an updated version of the hybrid approach of Heidbach et al. [2010]. The preliminary results show that the Africa-Eurasia plate convergence is a key control of the overall stress pattern. However, given the complex tectonic setting in particular due to the indentation/collision of the Adriatic micro block, the Alpine topography as well as forces that control the movement of the Anatolian and Aegean block, the stress pattern shows in these regions significant changes in the mean SHmax orientation as well as in the tectonic regime.